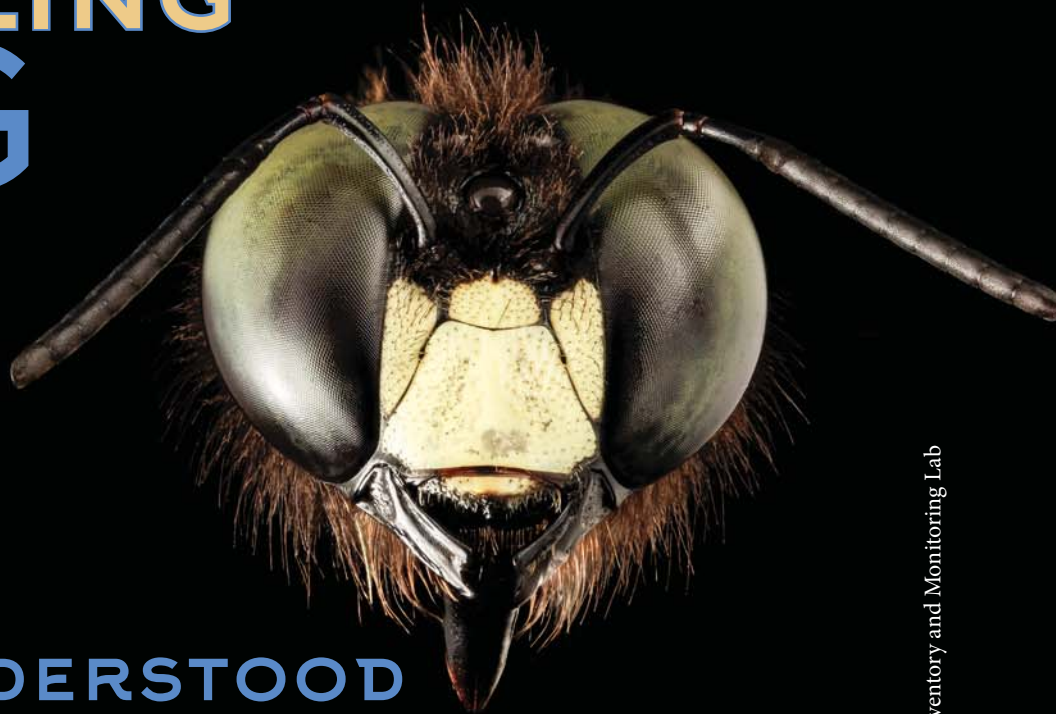


BUMBLING BIG



THE MISUNDERSTOOD CARPENTER BEES

by Brannen Basham

© USGS Bee Inventory and Monitoring Lab

A saw buzzed through wood, interrupting my thoughts and jostling my coffee. Or at least that's what I heard, but no one was around. Intrigued, I glanced toward where I heard the noise just in time to see a few tiny legs disappear up a perfect hole in the beam above my head. The sawing resumed, followed by a shower of sawdust which coated my shoulders. I could see from my position that it was a carpenter bee, creating the entrance to her nest by digging straight up and against the wood grain. This was completed at a dizzying pace. The large bee then made a 90 degree turn. Hidden from my sight, I knew she began following the grain of the wood to excavate enough space for her to raise offspring. While many may not smile upon discovering a bee boring into the wood beams of their home, carpenter bee move-in day is my favorite time of spring.

Often maligned for their habit of drilling into homes, these important and imperiled insects are worth enticing to your property. You just need to provide them with appropriate habitat much more inviting than your house.

North America is home to thousands of unique bees that have lived here for millions of years. Flitting from flower to flower, these finely tuned machines evolved mutually with the flowering plants in their area, each developing traits to maximize their own fitness. North American bees excel at

pollination as they go about their daily business, scrambling into floral depths to collect nectar and pollen. Many are small and quick enough to escape our notice.

The big, bumbling carpenter bees get a bad rap simply because of their unfortunate tendency to bore into wood. When we remove the dead trees they prefer, they're forced to build nests in the next best thing, the untreated and exposed boards of our houses and decks. When faced with our infamous carpenter bees, many people make a quick run for the nearest poison powder or jar death trap. All over the country misguided homeowners wage a battle against some of the largest and most charismatic bees to ever grace our skies.

Would you pause if you knew these insects are incredibly important pollinators? They are also an important food source for songbirds in the spring and fall. If you spot a large bumble bee with a shiny black butt in your garden or on a blooming hedge from early spring until late fall, you've met a carpenter bee. Although they are wood boring bees, they are anything but boring.

Carpenter bees are widely distributed and varied throughout most of the tropical and subtropical areas of the world. A few types like the ones we find in the United States have ventured into temperate areas. The social habits of carpenter bees differ between species, with some living a purely sol-

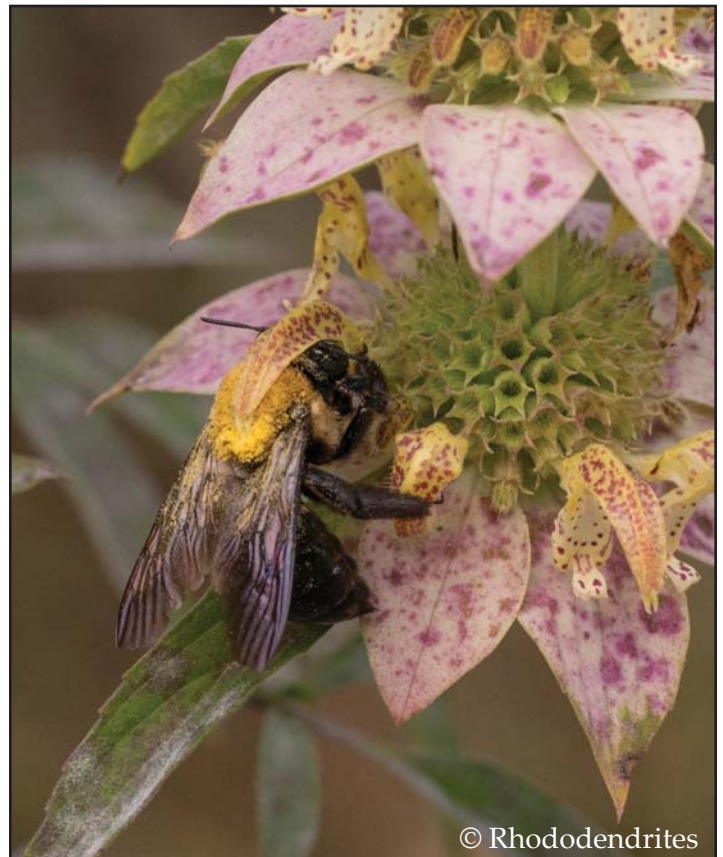


© David Schwen

itary life while others live together and possibly help each other raise young, construct nests called galleries, and ward off predators in semi-social settings. These bees may be able to change their degree of sociality based on the weather and flower conditions each year, banding together like hurricane survivors to help each other during especially difficult seasons.

Nesting habits are relatively similar between species. Female carpenter bees emerge from their nests after spending the winter tucked away inside of their galleries, which can reach several feet in length. Like many other insects, carpenter bees survive the winter hunkered down in protected locations. Locked away in their wooden caves, these tiny flying bears hibernate for winter, entering a state of suspended animation known as diapause.

After emerging from her winter slumber, a female carpenter bee immediately begins searching for a place to raise her young. In her natural habitat, the carpenter bee's prime nest locale is a dead tree branch, preferably one still attached to the tree. Upon finding a suitable site and constructing a foyer, she'll drill her way along the grain, saving the branch's structural integrity by mimicking a natural split in the wood. Since dead standing trees are some of the first items to be removed through urbanization, it is no surprise that our



© Rhododendrites



Eastern carpenter bee, female (Apidae, *Xylocopa virginica* (Linnaeus))
 USA, TX, Travis Co.: Austin
 Commons Ford Ranch
 30.33° N 97.89° W 155m 27° C
 Field with overgrown grass and flowers
 12.VI.2016 A. Santillana coll. #ASF505
 det. J.L. Neff 2017

Public domain image by Alejandro Santillana
 Produced as part of the "Insects Unlocked" project
 Specimen collected for the Freshman Research Initiative stream Bugs in Bugs
 The University of Texas at Austin

houses look inviting when a carpenter bee passes through. By leaving dead standing trees where they are, and by tucking branches and other refuse piles somewhere on your property, you can give the carpenters in your area a place to settle besides your home.

Carpenter bees seem to like reusing nests year after year, and they have a taste for conifer trees like pine, juniper, and cypress. If she cannot find an old vacant nest, the young female gets to work excavating a new nest in a suitable slab of wood.

These pollination juggernauts don't eat the wood that they bore, instead either tossing the chaff right out of the hole or using it to make partitions inside of their gallery. After clearing enough space and gathering a ball of pollen and nectar, the female lays an egg on top and seals her young into a private sawdust room.

The young then grow and emerge in late summer. The adults spend the winter sheltered in place and repeat the cycle the following spring. In tropical areas, there can be multiple generations per year. Carpenter bees are some of the longest living bees. Adult females can survive for multiple years. Quite the feat compared to most other bees that must cram their entire life into a few short weeks. In some species,

young carpenter bees don't leave the nest until a year or two after they hatch, spending their juvenile period performing house cleaning and guarding duties.

True homebodies, they don't move out easily. Thus simply plugging up carpenter bee holes never amounts to much in the way of deterring them. In many cases, your attempt to stifle their entrance will simply lead to them drilling new exit holes. Their nostalgia for previously used galleries means that once carpenter bees become used to a spot, they don't want to leave. A homeowner's best bet is to keep them from becoming interested in your tender sidings. Just put on some overalls and grab the paint can. Carpenter bees dislike painted or stained wood. But if they have no other option, these tough bees can even live in pressure treated wood.

Even though the bees themselves do little structural damage, if left over a long time, congregations can whittle away at your house. Predators like woodpeckers will make short work of any wood covering the protein rich galleries packed with pollen and larvae from the outside world. In cases of heavy colonization, removing the galleries and relocating them to a protected forest location nearby can encourage them to stay in the forest.



Don't move your roommates too far. Carpenter bees are very beneficial to have around the property. These bumbling behemoths are incredibly strong. The giant thorax houses powerful flight muscles, letting these bees fly in weather that is simply too risky for other insects. During cold, rainy, and windy weather carpenter bees pick up the slack in pollination, helping to pollinate those early fruit blooms like cherries, peaches and apples.

Carpenter bees don't just delicately sip nectar. At each bloom, these bees basically turn themselves into flying tuning forks. They vibrate their flight muscles at very specific frequencies that trigger resonance in their head and abdomen. Known as buzz pollination, this process helps dislodge pollen, especially in inverted flower types. Blueberries, tomatoes, eggplants, cranberries, and other similar flowers increased fruit set and size after buzz pollination. Carpenter bees and their fuzzy cousins the bumble bees are sonication specialists. When you spot them in and around your garden, you can grow award winning tomatoes.

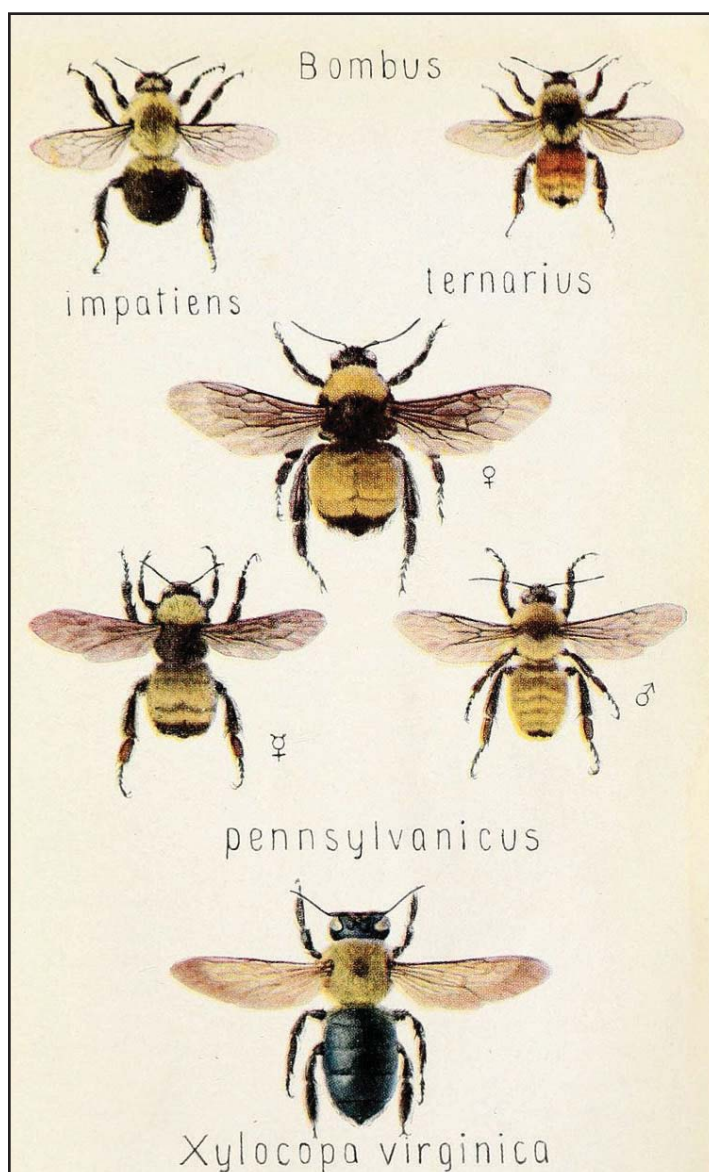
Carpenter bees also rob nectar. When they chance upon a flower with hard to reach nectar, they simply create a new access point. A bee bites into the base of the flower and makes a small drinking hole. In areas with an abundance of restrictive blooms, other insects follow carpenter bees around, re-using these holes to feed from otherwise impossible to reach flowers. Often these plants are non-native specimens that evolved to cater towards very different pollinators that don't exist here. Plant easily accessible (shallow bloomed) native flowers wherever possible, so carpenter bees don't need to gnaw into foreign blooms for sustenance.

Male carpenter bees are especially common in and around nesting or forage sites. Depending on the species, males either patrol small areas or hover in place while keeping an eye out for any passing females. Many male carpenter bees have a yellow dot on their forehead, and they will challenge any creature that ventures into their territory. No cause for alarm. The males lack a stinger and so the worst they can do is lightly headbutt you. Studies have shown that male carpenter bees are able to recognize their normal carpenter bee neighbors. These neighbors are given extra leeway versus other trespassers when they venture into a rival's area. Carpenter bee males will learn to recognize you as well if you are a constant visitor in their territory, moral support as you go about tedious yardwork.

And while they like to return to their natal nest, they aren't only home bodies. Carpenter bees can travel long distances in search of food, water, and nesting sites. Released up to seven miles away from their nest, bees were able to make it back home based on landmarks and other cues along the route, demonstrating that they possess a complex internal 'BeePS.' Intelligence studies on carpenter bees have been limited, however studies on their cousins the bumble bees have shown that these insects possess nifty problem-solving skills and can learn new behaviors from nestmates or even come up with their own personal solutions to obstacles.



A male Virginia carpenter bee *Xylocopa virginica*





A female Virginia carpenter bee *Xylocopa virginica*

Rather than denigrate these gentle giants for where they live, maybe it's time we learn to give them an eave or two in exchange for the countless services they provide. If a carpenter bee bed and breakfast doesn't sound enticing to you, there are several things you can do to try and keep them from moving in. Staining and painting exposed wood is paramount. In problem areas avoid using pine or other conifer wood. Leave dead standing trees and branches where they are on your property. Sometimes discarding untreated pine 2x4s in the corners of a yard can provide suitable housing for carpenter bees.

Carpenter bees represent the American spirit in their grit, hardworking nature, and abrasive reputation. A better understanding of their nesting needs lets us coexist in harmony. If we ensure these animals have a place to nest undisturbed, we can foster populations of these impressive flyers without them taking up residence in our homes. Early springs are proving more and more erratic. They may soon be the only juggernauts braving the cold to pollinate our beloved fruit trees. Let's bumble big!



Brannen Basham is a writer and horticulturist living in Waynesville, North Carolina. Together with his wife Jill, he owns Spriggly's Beescaping, a small business focused on habitat restoration and insect education. Brannen presents educational workshops regularly throughout the Western North Carolina region and is the author of the book *A Guide to the Wonderful World Around Us: Notes on Nature*.

